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THE POTENTIAL CONTRIBUTION OF PSYCHOLOGY TO INTER-DISCIPLINARY RESEARCH IN VOCATIONAL-TECHNICAL EDUCATION.

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DESCRIPTORS- *PSYCHOLOGICAL STUDIES, *VOCATIONAL EDUCATION, RESEARCH PROPOSALS, *EDUCATIONAL RESEARCH, STUDENT CHARACTERISTICS, *VOCATIONAL INTERESTS, *ASPIRATION, BIBLIOGRAPHIES, LITERATURE REVIEWS,

THE PURPOSE OF THIS PROJECT IS TO COLLECT INFORMATION CONCERNING THE STATUS OF PSYCHOLOGICAL RESEARCH RELATED TO VOCATIONAL EDUCATION, ORGANIZE THE INFORMATION TO PROVIDE GUIDANCE AND STIMULATION FOR DEVELOPING AND EXECUTING RESEARCH TO FILL CURRENT GAPS, COOPERATE WITH OTHER DISCIPLINES IN DEVELOPING RESEARCH PROPOSALS, AND PROPOSE AND DEVELOP METHODS BY WHICH PSYCHOLOGISTS CAN CONTRIBUTE TO RESEARCH IN VOCATIONAL AND TECHNICAL EDUCATION. FROM A SEARCH OF THE LITERATURE, SEVEN CATEGORIES OF RESEARCH HAVE BEEN IDENTIFIED--(1) ACADEMIC ACHIEVEMENT, (2) COUNSELING, INCLUDING TECHNIQUES AND USE OF TESTS, (3) DEMOGRAPHIC CHARACTERISTICS OF STUDENTS, EMPHASIZING CHARACTERISTICS OF RURAL STUDENTS AND IMPLICATIONS FOR EDUCATION, (4) TEACHING METHODS, (5) OCCUPATIONAL CHOICE, INCLUDING THE PROCESS OF VOCATIONAL DEVELOPMENT AND FACTORS INFLUENCING CHOICE OF A SPECIFIC OCCUPATION, (6) SCHOOL ENVIRONMENT, EMPHASIZING VARIABLES WITHIN THE SCHOOL SETTING THAT INFLUENCE STUDENT GOALS AND PERFORMANCE, AND (7) STUDENT CHARACTERISTICS, INCLUDING ASPIRATION LEVEL, INTERESTS, AND ABILITIES. RESEARCH CONCERNING STUDENT ASPIRATION LEVEL AND VOCATIONAL INTERESTS IS SUMMARIZED AND ITS IMPLICATIONS FOR TEACHING AND RESEARCH IN VOCATIONAL AND TECHNICAL EDUCATION IS DISCUSSED. THE FINAL REPORT WILL CONTAIN SUMMARIES IN THE OTHER FIVE AREAS AND WILL RECOMMEND STUDIES WHICH CAN AND SHOULD BE UNDERTAKEN BY PSYCHOLOGISTS. A LIST OF 69 REFERENCES IS INCLUDED. THIS REPORT APPEARS IN "APPENDIX OF FINAL RESEARCH REPORTS FOR PROJECT IN RESEARCH AND DEVELOPMENT IN VOCATIONAL AND TECHNICAL EDUCATION, NON-METROPOLITAN AREAS" (ED 011 069) WHICH SUPPLEMENTS VT 001 546. (JM)

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I. INTRODUCTION

A. Problem

Recent advances in psychology have produced concepts and information that are proving of considerable value to education. After a period during which psychologists neglected the field of education in favor of laboratory research, they are becoming aware of the needs and implications of their work for education. As a result, the educational implications of psychological research are being stressed with increasing frequency, and research being conducted by psychologists more often is done with educational needs in mind.

For the most part, however, this interest has been focused on traditional academic education, with less concern for other forms as exemplified in vocational and technical education. We believe that the Iowa State University Department of Psychology, by virtue of its strong basic research orientation and its position within a university with strong vocational and technical concerns, is in a unique position to make this needed contribution. Specifically, we intend to explore the current developments in psychology that have educational implications and to develop means by which these can be directly related to the needs of vocational and technical education. Where gaps are found, research will be conducted to fill these gaps, within the competencies and interests of the professional staff members of the Department of Psychology.

B. Objectives

1. To collect information concerning the current status of research and knowledge derived from the application of psychological principles and methodology to the study of educational problems.

2. To organize this information so as to provide guidance for persons engaged in vocational and technical education and to stimulate the development and execution of research projects to fill current gaps in knowledge.

3. To work closely with the members of the Iowa State University Department of Psychology, as well as with persons with related interests in other departments, to inform them as to current research needs in vocational and technical education to which psychologists might contribute, and to aid them in the development and execution of research proposals related to these needs.

4. To propose and develop methods by which psychologists, both at Iowa State and elsewhere, can make substantial contributions to research in vocational and technical education.

II. METHOD

This project has been underway for only about six months, and our results are therefore limited. Our first step, which has occupied most of our time thus far, has been a comprehensive survey of the psychological literature to locate research studies which have potential implications for vocational-technical education. We have relied primarily on the Psychological Abstracts for this survey, although we have included other sources too.

On the basis of the preliminary survey, the studies are arranged into areas which appear to have special importance for vocational and technical education. Each category is considered in detail, with the studies relevant to each category described and related to each other. From these descriptions, we hope to arrive at general conclusions concerning those areas in which research evidence is lacking and in which important contributions can be made by psychologists. Finally, we intend to design specific research projects aimed at closing these gaps.

III. RESULTS

The preliminary survey of the literature has been completed, with the possibility of later additions, and we have developed categories of research areas. We have concentrated thus far on those categories that seem to have direct implications for vocational-technical education, and we are in the process of summarizing the research literature in those categories, with emphasis on the implications for vocational-technical education and the gaps which might be filled by further research. The categories that we are analyzing include:

I. Academic achievement.

II. Counseling (including both counseling techniques and the use of tests).

III. Demographic characteristics of students (with emphasis on the characteristics of rural students and the implications for education).

IV. Teaching methods as they relate to students in vocational and technical programs.

V. Occupational choice (including the process of vocational development and factors influencing the choice of a specific occupation).

VI. School environment (variables within the school setting that influence student goals and performance).

VII. Student characteristics (including aspiration level, interests, and abilities).

Our time has been limited, and we are not close to the completion of this phase of the project. We have, however, drafted a preliminary report summarizing the research in the area of student characteristics as related to educational and vocational performance. Although not in its final form, this summary should serve as a representation of the form of the final report, which will cover research in all areas listed and will also recommend research studies which can and should be undertaken by psychologists.

IV. DISCUSSION

A. Student Characteristics

Level of aspiration. Psychological research dealing with the aspiration level of high school students is fairly extensive and may be considered from several standpoints. A few studies deal directly with the influence of the high school upon aspiration level; other articles are more generally concerned with the effect of success and failure on performance. Much of this literature also deals with the possible effects of socio-economic class, family influence, place of residence, and race upon occupational aspiration. Still other studies stress attitudes and personality factors, including the student's personal expectations, needs, and interests.

Studies dealing rather directly with the influence of the high school on student aspirations are exemplified by a survey of studies by Boyle (12), who concludes that the type or kind of school attended influences aspirations and that these goals are related also to variations in educational standards and kind of peer-groups likely to exist in a given type of school. Researchers such as Rosenfeld and Zander (49) point out that the teacher is an influential person in suggesting student aspiration and that students tend to accept teacher suggestions when they are rewarded, but tend to ignore or oppose teacher desires when indiscriminate coercion is perceived. These authors believe that these tendencies affect the degree to which students set their aspired grades congruent with their perceived capacities. In this same study, teacher disapproval of inadequate performance seemed to have no effect on aspirations,

but teacher disapproval of a good (at level of capacity) performance seemed to have a negative effect.

In his study of the level of aspiration of academically successful and unsuccessful high school students, Byers (13) concluded that both past and current experiences with academic tasks is related to goal-setting patterns of students in the actual classroom situation. However, Byers believes that past experience operates only until subjects gain experience in the current task. According to this study, failure seemed more closely associated with high and unrealistic goal-setting than did success experiences, which seemed closely related to realistic goal-setting. Hilgard (29) also considered school success in relation to level of aspiration and he, like Rosenfeld and Zander (49), stressed the educator as an influential person in helping to keep student goals realistic and attainable and in reducing social pressure. Hilgard writes that individually suitable, though relatively low-level, goals must be dignified and respected. An investigation by Bochow (9) found aspiration level relating, not only to the school situation or sequence of events, but also to individual goals, differences, and conflicts arising from high levels of aspiration.

Several aspiration-level studies have dealt with the more general aspect of the effect of success and failure on performance and with the influence upon student goals or ambitions of factors such as need for achievement (n Ach), fear of failure, reaction to frustration or anxiety, and ability. Investigators concerned with effects of success and failure on aspirations via n Ach or motivation include Feather (18, 19), Tureck and Howell (63), Dani (16), and Moulton (47). Feather's study (18) on level of aspiration and achievement imagery attempts to bring together aspiration studies and McClelland's (42) studies of achievement motivation by investigating the relationship between relaxed and achievement-oriented situations. Mean goal discrepancy scores showed a significant increase from Relaxed to Achievement-oriented situations. Achievement-projective scores also showed an increase from Relaxed to Achievement-oriented situations. Results were interpreted in terms of a dominant "fear of failure" set in the Relaxed situation and a dominant "hope for success" set in the Achievement-oriented situation. Similarly, Tureck and Howell (63) investigated success and failure situations and intensity of n Ach. They concluded that (a) when success preceded failure, the proportion of success acting alone did not influence intensity of n Ach., (b) when failure preceded success, n Ach score varied inversely with the proportion of success, and (c) when failures exceeded successes, greater n Ach was expressed when success followed failure than when failure followed success. A related study by Dani (16) investigated level of aspiration as a function on n Ach and fear of failure.

In a later study, Feather (19) found that a subject's expectation of success before task performance is positively related to n Ach in situations providing accomplishment opportunities. The finding that initial expectations were negatively related to test anxiety was interpreted by Feather in terms of the influence of past experience in related situations and may reflect the effect of subjective attractiveness of success and of repulsiveness of failure. A recent study by Moulton (47) found that subjects with a high fear of failure and a low n Ach raised their level of aspiration after failure and lowered it after success. In Moulton's study, instructions that were intended to reduce the degree of underestimation of the probability of success increased low levels of aspiration.

Studies dealing with student fear of failure and with student reaction to frustration and anxiety include those by Schroder and Hunt (53), Mahone (40,41), Lowe (38), and Amin (2). Schroder and Hunt tested hypotheses relative to failure-avoidance behavior in situational interpretation and errors in problem-solving situations. The subjects who made avoidant interpretations of failure and criticism (a) avoided failure in a problem-solving situation, (b) maintained their self-evaluation after criticism, (c) stated higher evaluations following a low "failing" score, and (d) over-evaluated their performance. In addition, the subjects who used failure-avoidant behavior in a problem-solving situation (a) set higher goals (b) used fewer alternative solutions in attempting to solve the problem, and (c) performed less effectively after failure. Schroder and Hunt emphasize the consideration of certain other personality variables of obvious importance (e.g., psychological need or motive) in further research. In addition, they contrast their theory of "failure-avoidance" with the "fear of failure" concept of Atkinson (5) and they recommend further investigation of these constructs. Mahone (40) found that realism of vocational aspirations is related to n Ach and to the assessment of one's capability. He contends that a student who fears failure tends to be unrealistic, rather than to aspire realistically and thus be forced to "prove himself."

Still other aspiration-level studies have investigated reactions to success and failure and the influence of ability on aspiration level. Lichtenberg (37), in his study on reactions to success and failure during individual and cooperative effort, found that a failure of early action in non-creative tasks "causes" more persons to lower their estimation of the probability of successfully completing their task when working alone than when working cooperatively. Gruen's (24) study of a new level of aspiration test found that responses to a verbal maze varied in the expected direction with the experience of success or failure. A more recent study by Lachman (36) showed how

systematic manipulation of length of task practice periods can maximize the probability of success or failure. His results indicated that aspirations rise with success, fall with failure, remain close to performance level, and remain above rather than below performance level. Research conducted by Mohr (44) concerned ability tasks as a function of both level of ability and motivation conditions, whereas Muthayya (48) found a lack of relationship between achievement and aspiration level, intelligence and aspiration level, and achievement and intelligence. Fruchter (21) investigated ability patterns in technical training criteria and pointed out possibilities in analyzing criteria as a method for understanding the variance in technical training course grades and other proficiency criteria.

The amount of psychological literature dealing with the possible effects of socio-economic status, the family, place of residence, and race upon student aspirations is considerable. In a study of social class attitude and level of occupational choice in school-leavers, Jahada (1953) found that lower social class members over-rated aspiration level more than did other subjects. Seidman (56) and Stefflre (58,59) studied intelligence, socio-economic background, and student ambition, finding that duller students from each social-economic group aspire downward, while the brighter ones aspire upward. Similar findings by Empry (17) indicate that, although the higher social classes have higher aspirations, lower social-class students aspire more highly than did their fathers. Still another study by Weiner and Murray (66) supports Empry's conclusions by indicating that lower-class parents now wish their children to attend college and, thus, to aspire more highly than previously was the custom.

Closely related to socio-economic class are the factors of family influence and place of residence. In their study of class and family influences on aspiration level, Bennett and Gist (8) reported that urban students showed little variation of aspirations and plans among social classes, but that occupational plans varied significantly with class. Urban versus rural place of residence also proved relevant to student aspiration level, as is shown in studies by Hodgkins and Parr (30), Haller (25,26), Haller and Sewell (27), Moreland (45), and Grigg and Middleton (23). Hodgkins and Parr, however, believe that socio-economic status bears more relationship to aspiration level than do urban-rural differences.

Somewhat stronger emphasis on place of residence is given by Haller (26), who writes that the lower educational aspiration levels of farm-reared youth in the city stem from "farming" as a normal part in the student's self-concept. He further indicates that rural

youth underestimate the importance of education in achieving occupations, and he points to the need for further hypothesis-testing in this area. The studies by Grigg and Middleton and by Moreland also considered both educational and occupational aspiration levels, stating that educational, rather than occupational, aspirations are lower for rural than for town or city students.

A few studies have attempted to relate this "place of residence" influence and race factors to aspirational level. Contrary to expectations, Holloway and Berreman (31) did not find a consistent tendency for the level of aspiration of elementary school pupils to be associated with social class, nor were there any significant differences between Negro and white pupils in aspirations when social class was held constant. In another study, Smith (58) investigated the personal and social adjustment of Negro children in rural and urban areas of the South and found no differences between the two groups as measured by the California Test of Personality.

Still another research concern in the realm of aspiration level has been that of attitudes and personality factors, including student expectation and needs. When questioned about vocational preferences and their reasons for these preferences, Hurlock and Jansing's (32) subjects indicated that scholastic achievement had little bearing on their vocational choice. Sewell, Marshall, Haller, and DeHart (57) found the variables of education, socio-economic status, ethnic group, sex, father's occupational status, size of farm, and age to be related to the attitudes of rural students toward school. Schutz and Blocher (54) also found level of occupational choice to reflect student attitude, or more specifically, various aspects of self-concept. A study by Ryan (51) investigated factors affecting realistic and unrealistic occupational choice and found such choices related to aspects of self, aspects of reality, and aspects of key persons (awareness of others).

Research connected with student personality factors, such as expectations and needs, has been conducted by Wren (69), Greig (22), Wilson (67), Stephenson (61), and Heath, Maier, and Remmers (28). Wren, Heath et al. found that workers aspire most for power, prestige, and income and that aspiration level is related to dominance, intelligence, educational status, family occupation, and income. The study by Greig emphasized the lack of useful knowledge that many (1/3) students possessed in regard to their preferred job and stressed implications of the results for social psychology and guidance. Although Stephenson's study indicates that occupational aspirations have little relationship to either family occupation or community needs, the study by Wilson (67) showed a fair correspondence between vocational choice and opportunity, with a large number of choices

in the skilled and semi-skilled job areas. However, as in earlier studies, occupational plans in the Stephenson study were somewhat more in line with community needs than were aspirations. Still other research in the area of student aspiration level has been conducted by Lurie (39), Stubbins (62), Walder (65), Arsenian and Laird (4), Kledzik (35), Winslow (68), Schwartz (55), and Cotter (15). However, this research seemed less relevant for the problem under consideration.

B. Interests

Psychological research concerning student interests that seems to have implications for vocational-technical education may be considered in terms of (a) the influence of interests on both vocational choice and school achievement and (b) the development and stability of interests. Bedford's (6) study of the vocational choices and interests of rural high school students indicates that vocational interests often bear no relation to available vocational opportunities and that subjects often lack knowledge of the training required for their chosen field. In this study, only a small percentage of students chose industrial or agricultural fields, while the professional areas were often chosen without apparent justification.

A study by Stefflre (59,60) emphasized level of interest as related to vocational aspiration level and concluded that this interest level furnishes a rough index of direction and extent of the student's aspiration as expressed through the selection of vocational objective. A study of Rubisoff (50) attempts to relate interest-values to occupational attitude and choice.

Several studies have been concerned with how interests influence school achievement. A study of interests and general educational development by Frandsen (20) upheld the hypothesis that interests correlate with achievement when achievement involves performance over time and found that interest factors are influential in course selections. Although Jackson (33) also found interests and course selection to be related, his findings did not support a significant relationship between interest and intelligence, vocational course success, or grade average. In investigating interest scores in predicting success in vocational school programs, Motto (46) found that the Kuder Preference Record did not differentiate successful from unsuccessful vocational school trainees, and Samuelson (52) found a significant but limited predictive value for Kuder Record items. Still another study, by Armstrong (3), investigated the interests and social adjustments of under-achievers and normal achievers at the secondary school level. Allen (1), Behrend (7), Valeriu (64), and Collins (14) have also stressed the influence of interests on achievement.

An article by Book (11) suggests that, to help a student develop interests, educators must (a) build new interests on old ones, (b) secure new information, (c) plan work so that students can succeed in order to (d) make the student exert himself fully and vigorously toward his task. Bondoreveskii (10) investigated the formation of vocational interests in high school pupils with vocational training. This study reports that academic and vocational interests are affected by the type of industrial training undertaken in work-study programs, by the organization of work in industrial settings, and by the influence of the teacher. Finally, McCoy (43) has investigated stability and change of measured vocational interests of high school students. Other research concerning interests relates more directly to the subject area of guidance and will be discussed in connection with that literature.

C. Summary

Inasmuch as the major purpose of this project is to stimulate psychological research focused on problems of vocational and technical education, we shall consider here the major implications of the studies previously described for teaching and research.

Student Characteristics

Level of aspiration. Studies dealing with the influence of the high school teacher upon student aspiration stress the educator as a model for student performance and appropriate goal-setting. This situation poses the potential research question of how teachers may best utilize their position to help students develop realistic and attainable goals and to reduce social pressures upon students by dignifying and respecting relatively low-level goals. In addition, valuable research might be conducted to ascertain what kinds of teachers provide effective models for the less academically oriented students.

Studies dealing with the effect of success and failure on performance emphasize the influence of the student's achievement motivation, fear of failure, and expectation upon aspiration level. These findings suggest that the teacher may maximize the probability of success and help the student to deal with success and failure situations by understanding the effect of achievement motivation and of student expectation on aspiration level, on school performance, and on vocational realism.

Research on social class and urban-rural differences in aspiration level indicate that socio-economic status bears more relationship to aspiration level than do urban-rural differences, although rural youth do seem to underestimate the importance of

education in attaining occupations toward which they aspire. The increased social mobility of today's youth and their relatively higher aspiration levels should impress the educator with his responsibility to help students set realistic and attainable goals and should also encourage research in this area.

Interests. Studies dealing with the relationship between interest and vocational choice indicate that vocational interests often bear no relation to available vocational opportunities and that students often lack knowledge of the training required for their chosen field. This situation, and the fact that only a minimal relationship seems to exist between interest and school success, should offer opportunities for research as to how teachers and guidance counselors may inform students about existing opportunities and as to how interest measures may be improved or developed to better predict vocational school success.

V. CONCLUSIONS AND IMPLICATIONS

Because this report covers only a portion of the total scope of the research to be surveyed, it is premature to draw general conclusions and implications. These will be appropriate when the entire project has been completed.

VI. SUMMARY

A survey of the literature concerning psychological research applicable to vocational and technical education has revealed a broad range of research studies, which have subsequently been organized into relevant areas. In this report, research studies concerning two areas of student characteristics-level of aspiration, and vocational interest--have been described and their implications for teaching and research in vocational and technical education have been discussed.

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15. ABSTRACT (250 words max.)

The purpose of this study is to survey the literature concerning psychological contributions to educational research, with particular reference to those studies which have implications for vocational and technical education. On the basis of this survey, the investigators intend to delineate those areas in which further knowledge is needed and recommend ways in which psychologists can make important contributions to vocational and technical education. The phase of the project reported here is concerned primarily with the psychological variables of level of aspiration and student interest as influences on educational goals and achievement.

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